Trend Study 16B-5-02

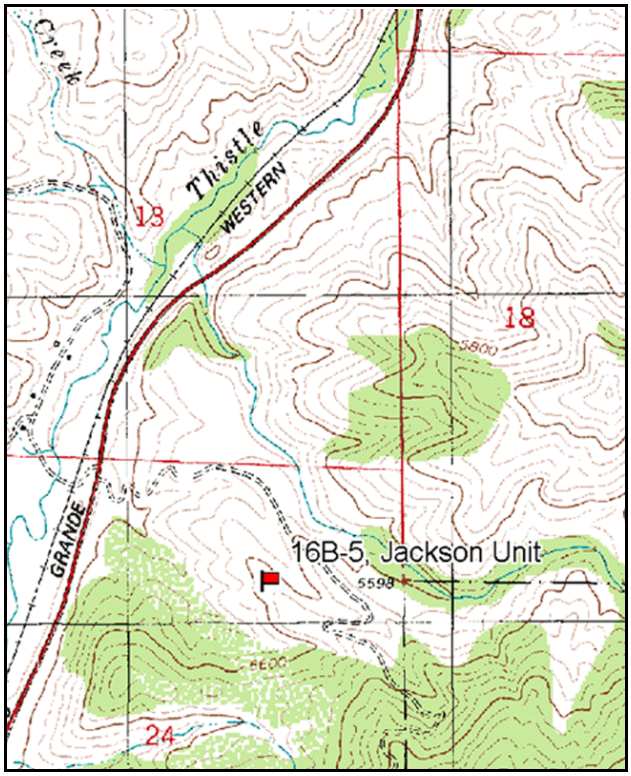
Study site name: Jackson Unit. Vegetation type: Chained, Seeded P-J.

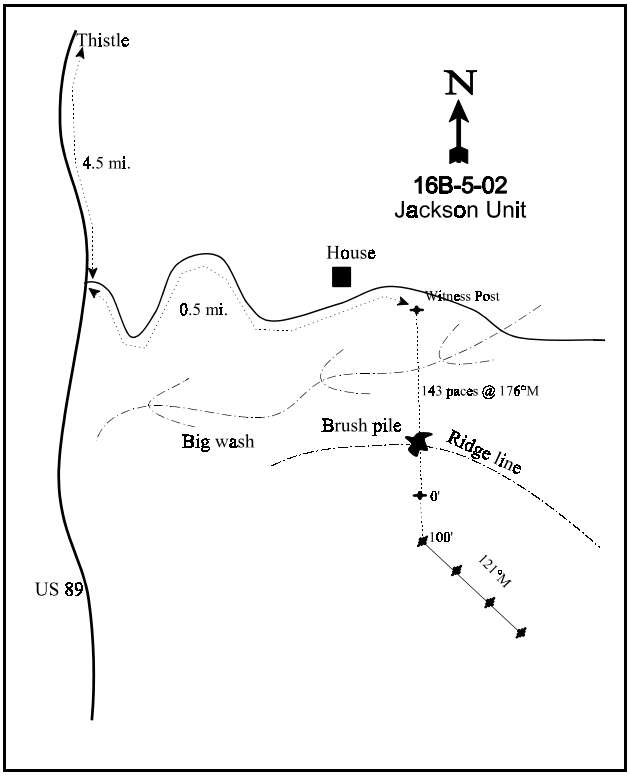
Compass bearing: frequency baseline 181 degrees magnetic (lines 2-4 @ 121°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (59ft), line 3 (79ft), line 4 (34ft). Rebar: belt 3 on 1ft.

LOCATION DESCRIPTION

From Thistle bridge, proceed south on U.S. 89 for 4.5 miles. From here, take a side road east onto a DWR reseeding for 0.5 miles. Stop at a full high witness post. From this post, walk 143 paces at 176 degrees magnetic to the 0-foot baseline stake marked by browse tag #417.





Map Name: Birdseye

Diagrammatic Sketch

Township 10S, Range 3E, Section 24

GPS: NAD 27, UTM 12S 4421090 N 454416 E

DISCUSSION

Jackson Unit - Trend Study No. 16B-5

The 1972 Jackson Unit chaining was previously sampled by a permanently marked line-intercept transect. This study, which is on Division property, was established in 1989 to replace the line-intercept study. Aspect of the study is southwest, and slope is moderately steep at 28%. This is the lowest elevation study in the unit at 5,600 feet. Grass is abundant, but juniper release and/or reestablishment is becoming a limiting factor to the browse component. Elk appear to be using the area in moderate numbers in winter and spring. Quadrat frequency of elk pellet groups was moderately high at 36% in 1997, with markedly less sign of deer (quadrat frequency of 14%). Pellet group transect data taken in 2002 estimated 45 elk days use/acre (111 edu/ha) and 10 deer days use/acre (25 ddu/ha). The lack of palatable winter browse makes this site less important to deer.

The soil is fairly deep with an effective rooting depth of almost 15 inches. It is well-drained, has a sandy clay loam texture, and a neutral pH (7.2). Phosphorus is low at only 6.9 ppm and could be limiting to plant development as 10 ppm is thought necessary for normal plant growth and development. Natural vegetation on this soil type consists of juniper, pinyon pine, bitterbrush, big sagebrush, perennial grass, and rabbitbrush. Due to the slope and amount of bare soil on site, erosion hazard is moderate. A high amount of bare soil has been present during all readings, currently (‘02) estimated at 25%. However, perennial grasses seem to limit erosion and gullies in the area appear stable with only slight soil movement. An erosion condition class assessment was determined to be stable in 2002. Rock and pavement cover combined are also high at 17% and 22% in 1997 and 2002 respectively.

Utah juniper is the dominant overstory vegetation on this study. Juniper density was estimated at 210 trees/acre using the point quarter method in 1997. Most of the trees were in the 4 to 8 height class. Juniper density increased slightly to 219 trees/acre in 2001 with trees increasing in height. Average diameter was estimated at about 6 inches. This area appears to have the need to be treated again to remove the juniper.

Very little palatable forage for browsing animals exists on the site. There are a few big sagebrush plants and small clumps of young Gambel oak scattered throughout the area. Recruitment of shrub populations will be difficult in the future with intense competition from juniper and seeded perennial grasses. Pricklypear cactus is common throughout the site.

Grasses are the prevalent vegetation both on the site and the surrounding slopes. The understory is composed of a mixture of seeded and native species including crested wheatgrass, intermediate wheatgrass, needle-and-thread grass, Indian ricegrass, and bluebunch wheatgrass. It was noted in past reports that grasses had increased and the prevalence of cheatgrass had decreased since 1978. This is one of the few reports that makes mention of the presence/abundance of cheatgrass in the line-intercept studies, especially since annuals were not included in the range trend studies until 1992. Sum of nested frequency of perennial grasses increased slightly between 1989 and 1997, but decreased by 20% between 1997 and 2002. As with the previous study, this is likely the result of drought coupled with competition from an increasing juniper component. The grasses receive some light grazing pressure from livestock and elk, as do the few palatable forbs which include seeded species such as Lewis flax and alfalfa. Vigor was good in 2002 despite drought conditions. Perennial forbs have been sparse and insignificant on this site in all years, but further declined in abundance in 2002 due to drought. Pale alyssum, an annual, was the most abundant species in 2002.

1989 APPARENT TREND ASSESSMENT

Soils appear to be stable at the present time. Soil condition has undoubtedly improved since treatment as ground cover characteristics (protective cover from herbaceous vegetation, litter, and cryptogams) have increased. Erosion is slight. The vegetative trend appears to be moving towards increasing juniper and oak, which is beneficial up to a point. Grasses remain in very good condition and vegetative trend appears to be improving.

1997 TREND ASSESSMENT

Soil trend is up slightly due to a decline in percent bare ground from 24% to 16%. Also, almost three-forths of the vegetative cover is contributed by the herbaceous understory. Browse is limited on the site and provides little forage. Trend is considered slightly down due to a decline in sagebrush and a gradual increase in the dominance of junipers. Trend for the herbaceous understory is stable with similar nested frequency values for perennial grasses and forbs between years.

TREND ASSESSMENT
soil - up slightly (4)
browse - down slightly (2)
herbaceous understory - stable (3)

2002 TREND ASSESSMENT

Soil trend is stable. Bare soil increased, but perennial grasses remain the dominant vegetation class and they are keeping soils stabilized at the present time. The increase in bare soil is a direct result of the drought the last few years. It should decline with increased vegetative growth from grasses and forbs in association with better precipitation in the future. Browse remains limited and virtually insignificant on this sight. The lack of palatable, abundant browse really limits the usefulness of this site as a critical big game wintering area, especially deer. Browse trend is stable but poor. The herbaceous understory is slightly down with a 20% decline in sum of nested frequency for perennial grasses. A return to normal precipitation patterns will likely reverse this trends as well as increase the abundance of forbs. Retreatment of the juniper component and seeding of preferred browse for big game should be considered in the future.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Herd unit 16B, Study no: 5

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
G	Agropyron cristatum	136	133	126	53	54	52	3.98	4.24
G	Agropyron intermedium	$_{b}$91	$_{b}$97	$_{a}$65	37	33	25	1.54	.90
G	Agropyron spicatum	41	57	67	17	21	26	2.84	2.57
G	Bromus inermis	4	-	-	1	-	-	-	-
G	Bromus tectorum (a)	-	103	113	-	40	42	.76	.38
G	Elymus junceus	1	1	-	1	1	-	.00	-
G	Festuca ovina	$_{a}$-	$_{c}$36	$_{b}$17	-	16	7	1.37	.89
G	Oryzopsis hymenoides	48	44	30	27	21	15	.95	1.43
G	Poa secunda	2	11	6	1	5	3	.07	.04
G	Sitanion hystrix	3	2	-	1	2	-	.06	-
G	Stipa comata	$_{b}$123	$_{ab}$94	$_{a}$70	51	40	28	3.73	4.02
Total for Annual Grasses		0	103	113	0	40	42	0.76	0.38
Total for Perennial Grasses		449	475	381	189	193	156	14.58	14.12
Total for Grasses		449	578	494	189	233	198	15.34	14.51
F	Agoseris glauca	-	2	-	-	1	-	.00	-
F	Alyssum alyssoides (a)	-	$_{b}$331	$_{a}$227	-	94	76	4.27	.78
F	Allium spp.	1	3	-	1	1	-	.15	-
F	Astragalus spp.	1	4	-	1	2	-	.06	-
F	Astragalus utahensis	$_{a}$-	$_{b}$9	$_{a}$4	-	7	2	.55	.03
F	Camelina microcarpa (a)	-	2	-	-	1	-	.00	-
F	Cirsium spp.	1	1	1	1	1	1	.15	.00
F	Descurainia pinnata (a)	-	1	-	-	1	-	.00	-
F	Eriogonum spp.	$_{b}$14	$_{a}$-	$_{a}$-	7	-	-	-	-
F	Linum lewisii	$_{b}$11	$_{b}$10	$_{a}$-	7	5	-	.62	-
F	Medicago sativa	3	-	-	2	-	-	-	-
F	Oxytropis spp.	3	-	-	1	-	-	-	-
F	Phlox longifolia	-	5	-	-	3	-	.01	-
F	Ranunculus testiculatus (a)	-	-	5	-	-	3	-	.01
F	Streptanthus cordatus	10	4	4	5	2	2	.03	.01
F	Tragopogon dubius	3	8	-	2	4	-	.07	-
F	Unknown forb-perennial	-	3	-	-	1	-	.00	-
F	Verbascum thapsus	-	1	-	-	1	-	.00	-
Total for Annual Forbs		0	334	232	0	96	79	4.28	0.79
Total for Perennial Forbs		47	50	9	27	28	5	1.67	0.05
Total for Forbs		47	384	241	27	124	84	5.95	0.84

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 16B, Study no: 5

Type	Species	Strip Frequency '97	Strip Frequency '02	Average Cover % '97	Average Cover % '02
B	Artemisia tridentata tridentata	0	0	.15	-
B	Chrysothamnus nauseosus albicaulis	1	3	-	.18
B	Chrysothamnus viscidiflorus viscidiflorus	1	1	-	.15
B	Gutierrezia sarothrae	7	1	.03	-
B	Juniperus osteosperma	8	15	6.07	8.62
B	Opuntia spp.	41	29	1.19	.61
B	Quercus gambelii	1	0	-	-
Total for Browse		59	49	7.45	9.56

CANOPY COVER -- LINE INTERCEPT
Herd unit 16B, Study no: 5

Species	Percent Cover '97	Percent Cover '02
Chrysothamnus nauseosus hololeucus	-	.17
Chrysothamnus viscidiflorus viscidiflorus	-	.25
Juniperus osteosperma	5.8	10.67
Opuntia spp.	-	.17

Point-Quarter Tree Data
Herd unit 16B , Study no: 5

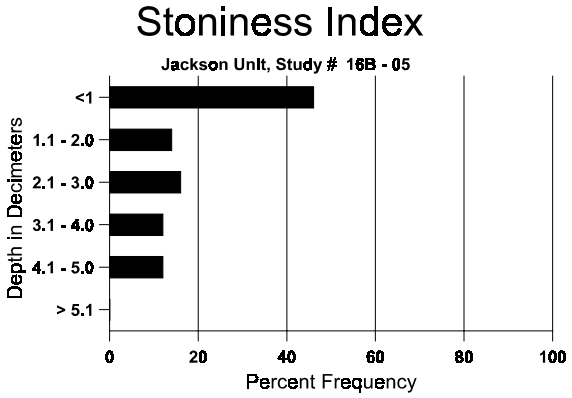
Species	Trees per Acre '97	Trees per Acre '02	Average diameter (in) '97	Average diameter (in) '02
Juniperus osteosperma	210	219	5.6	5.3

BASIC COVER --
Herd unit 16B, Study no: 5

Cover Type	Nested Frequency '97	Nested Frequency '02	Average Cover % '89	Average Cover % '97	Average Cover % '02
Vegetation	364	329	7.0	31.12	27.02
Rock	259	254	12.5	8.57	12.51
Pavement	308	305	12.8	8.26	9.68
Litter	385	382	43.5	29.96	37.19
Cryptogams	182	180	0	4.13	9.30
Bare Ground	269	288	24.3	16.14	24.74

SOIL ANALYSIS DATA --
Herd Unit 16B, Study no: 05, Jackson Unit

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.6	52.6 (21.7)	7.2	56.7	19.7	23.6	2.5	6.9	128.0	.6



PELLET GROUP FREQUENCY --
Herd unit 16B, Study no: 5

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'97	'02	⁄02	⁄02
Sheep	-	1	-	-
Rabbit	20	3	-	-
Horse	-	1	61	N/A
Elk	36	7	583	45 (111)
Deer	14	10	131	10 (25)
Cattle	-	1	17	1 (4)

BROWSE CHARACTERISTICS --
Herd unit 16B, Study no: 5

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata tridentata																		
M	89	-	1	-	-	-	-	-	-	-	1	-	-	-	33	29	21	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	62	65	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	61	26	0
D	89	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'89	33%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	99	Dec:	67%
	'97	0		0%
	'02	0		0%

Chrysothamnus nauseosus albicaulis																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	31	37	1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	28	44	0
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	3	-	-	-	-	-	-	-	-	2	-	-	1	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	33%

%Change
+67%

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	0	Dec:	0%
	'97	20		0%
	'02	60		100%

Chrysothamnus viscidiflorus viscidiflorus																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	15	15	1
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20	16	19	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

%Change
+ 0%

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	0	Dec:	-
	'97	20		-
	'02	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	8	-	-	-	-	-	-	-	-	8	-	-	-	160	10	9	8
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	8	11	0
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	00%	-91%
'02	00%	00%	100%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	0	Dec:	0%
	'97	220		0%
	'02	20		100%

Juniperus osteosperma																		
Y	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33	102	55	1
	97	5	-	-	-	-	-	3	-	-	8	-	-	-	160	-	-	8
	02	14	-	-	-	-	-	-	2	-	15	-	-	1	320	-	-	16
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	+63%
'97	00%	00%	00%	+47%
'02	00%	00%	06%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	66	Dec:	-
	'97	180		-
	'02	340		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
S	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	89	4	-	-	-	-	-	-	-	-	4	-	-	-	133			4
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	13	-	-	-	-	-	-	-	-	13	-	-	-	260			13
M	89	21	-	-	-	-	-	-	-	-	21	-	-	-	700	5	5	21
	97	84	-	-	-	-	-	-	-	-	84	-	-	-	1680	6	11	84
	02	63	-	-	-	-	-	-	-	-	63	-	-	-	1260	5	10	63
D	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	8	-	-	-	-	-	-	-	-	-	-	-	8	160			8
	02	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	140			7
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	+53%
'97	00%	00%	09%	-12%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	866	Dec:		4%
'97	1860			9%
'02	1640			7%

Quercus gambelii																		
S	89	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	89	5	6	1	-	-	-	-	-	-	12	-	-	-	400			12
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	2	-	-	-	-	-	-	-	2	-	-	-	40	19	24	2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	15	8	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	50%	08%	00%	-90%
'97	100%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	400	Dec:		-
'97	40			-
'02	0			-